

April 17, 2006



To: Mr. Noah C. Hawk, Art Unit: 3637
From: Michael A. Zerillo
Subject: Response to Office Action Summary of March 28, 2006
Patent Application Number 10/737,330
Comments and Remarks

Please note that certain text has been highlighted to emphasize words and phrases, and that no other meaning is intended. It is a matter of record that the original specifications have never been amended. Claims amended in the 1/3/06 filing remain operative.

1. Paragraph 1 of Office Action:

Examiner states, "reply filed on 1/3/06 is not fully responsive to the prior Office Action." "However, since the submission appears to be a bona fide attempt to provide a complete reply, applicant's submission has been entered."

Comment: Applicant thanks Examiner for entering his 1/3/06 submission.

2. Paragraph 2 of Office Action:

Examiner refers to the enablement requirements of 35 U.S.C. 112. "The specification shall contain a written description of the invention", "to enable any person skilled in the art", "to make and use the same", "and set forth the best mode contemplated by the inventor of carrying out his invention".

3. Paragraph 3 of Office Action:

Examiner rejects Claim 1-3 under 35 U.S.C. 112 "as failing to comply with the enablement requirement". "The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art", "to make or use the invention".

Remark 3A: The specification clearly points out how to **make** the invention. Examples begin on page 4, paragraph (0009). "The motor housing comprises a low voltage reversible motor driving gears and a cable reel." Paragraph (0011) "FIG. 4 illustrates a partial view of an

embodiment of the present invention showing its control module”, “control module up and down-switches, electric wires, remote control receiver, and remote control transmitter.”

Paragraph (0014) “Low voltage wire pair 20 connects motor housing 16 to control module 21”, “Low voltage power cord 22 connects control module 21 to AC-DC electric power supply 23.” These descriptions permit one skilled in the art to **make** the invention using a geared motor driving a cable reel and connected by wires to a controller consisting of switches, remote control receiver, transmitter, and electric power supply. It is argued that the enablement requirement is met concerning “manner and process of **making**” the invention. Applicant requests that Examiner withdraw his objection that manner and process of making is not in the specification.

Remark 3B: The specification clearly points out how to **use** the invention and “sets forth the best mode contemplated by the inventor of carrying out his invention”. A comprehensive example begins on page 5, paragraph (0016) “One example of how to install the present invention is to position conventional patio umbrella 10 vertically with lower end of mast 13 supported in a freestanding position.” “Next, operate winch mechanism 12 to open canopy 11”, “**or otherwise open canopy**” (which is the appropriate instruction for the types of umbrellas in Claims 1 and 2 that do not have a winch mechanism). “Position motor housing 16 under canopy 11 near the uppermost end of mast 13 and hold against mast 13.” “As in Fig. 3, position motor housing mounting bracket 24 on the opposite side of motor housing 16 and hold both against mast 13.” “Join motor housing 16 and motor housing mounting bracket 24 using screws 25.” “When screws 25 are tightened motor housing 16 and motor housing mount bracket 24 are securely clamped to mast 13 and prevented from moving.” “As in Fig. 2, attach one end of cable 18 to cable reel 17 using retention means in the cable reel 17.” “Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot 42 at the end of cable 18 on the bottom side of yoke 19, or use an alternate means to affix cable 18 to yoke 19.” “**Thereby yoke 19 is drivingly engaged with motor 26 by means of gears 27, cable reel 17 and cable 18.**” “As in Fig. 4, position control module 21 against mast 13 on top of table 14.” “As in Fig. 5, position control module mounting bracket 30 on opposite side of mast 13 and control module 21.” “Join control module 21 and control module mounting bracket 30 using screws 31 as illustrated in Fig. 4 and Fig. 5.” “When screws 31 are tightened

control module 21 and control module mounting bracket 30 are securely clamped to mast 13 and prevented from moving.” “Lower canopy 11 using winch mechanism 12 in Fig. 1 or use other means until canopy 11 closes fully.” “Inspect cable 18 to verify that it is stretched tight between cable reel 17 and yoke 19, and if necessary adjust length of cable 18 by relocating knot 42 until cable 18 is stretched tight between cable reel 17 and yoke 19.” “Winch mechanism 12, rope 40 and pulley 41 are now bypassed and no longer required, yet can remain in place and will not impede operation of the present invention.” “Plug AC-DC Adapter 23 into wall outlet.” The preceding sets forth “the best mode contemplated by the inventor of carrying out his invention”. It is evident that anyone who can use a screwdriver, tie a knot, plug-in an AC-DC Adapter and operate a switch can use the invention. It is argued that the enablement requirement is met concerning “manner and process of using” the invention. Applicant requests that Examiner withdraw his objection that manner and process of using is not in the specification.

3. (continued) Paragraph 3 of Office Action:

Examiner states there is “subject matter which was not described in the specification”, and “The phrases “install-it-yourself,” “adapts with little or no modification,” and “that an average person can easily install” in all three claims appear to have no support in the specifications.

Remark 3D: The phrases “install-it-yourself,” “adapts with little or no modification,” and “that an average person can easily install” in all claims are supported in the specifications. Paragraph (0016) in the specification describes the simplicity and ease of installing and using the invention, “position conventional patio umbrella 10 vertically,” “open canopy,” “position motor housing 16 under canopy 11 near the uppermost end of mast,” “position motor housing mounting bracket 24 on the opposite side of motor housing 16 and hold both against mast,” “join motor housing 16 and motor housing mounting bracket 24 using screws 25,” “attach one end of cable 18 to cable reel,” “attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot,” “lower canopy,” “plug AC-DC Adapter 23 into wall outlet”. Moreover, in paragraph (0018), “To open canopy 11 using the present invention, press and hold up-switch 28 or up-switch 35,” “to close canopy 11 using the present invention, press and hold down-switch 29 or down-switch 34.” The preceding in the specification describes the straightforward installation process and supports the “install-it-

yourself" assertion in the claims. The specification sets forth that installation requires **minimal skill and dexterity**. As contemplated by the inventor, and described in the specification paragraph (0007), "An additional object of the present invention is to provide a **retrofit** motor and control means that **an average person can easily install** to a conventional patio umbrella with little or no modification to the umbrella." In specification Paragraph (0016), the inventor teaches how to install the device using only a screwdriver and by tying a knot. It could not be more simple than that. The device is truly "install-it-yourself" ready. The specification supports the claim "adapts with little or no modification". In the specification, the device adapts with **no modification** is described in paragraph (0016), "Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot 42," indicating that **no modification to the umbrellas** is required if cable can be inserted through existing hole in yoke. In the specification, adapts with **little modification** is described "or use an alternate means to affix cable 18 to yoke 19," where "an alternate means" might be to affix an eye-screw to the yoke for tying the cable end, or some other means as determined by the installer. The use of an eye-screw is an example of **little modification**. The assertion in the claims "that an average person can easily install" is supported in the specification. The specification describes installation using only a screwdriver and tying a knot. It is accurate to say that a person who can use a screwdriver, tie a knot, plug in an AC-DC Adapter and operate a switch is an average person. One skilled in the art would rate the preceding user skills as basic or low level, and in other words "**easy**". The phrases "**install-it-yourself**," "**adapts with little or no modification**," and "**that an average person can easily install**" is clearly supported in the specification. Applicant requests that Examiner withdraw his objection of subject matter which was not described in the specification.

4. Paragraph 4 of Office Action:

Examiner references the second paragraph of 35 U.S.C. 112 "The specifications shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."

Remark 4A: Applicant's claims do specifically point-out and distinctly claim the subject matter of his invention. All claims are supported in the specifications, and are detailed in the following Remarks to Paragraph 5 of the Office Action.

5. Paragraph 5 of Office Action:

Examiner states, “Claims 1-3 are rejected under 35 U.S.C. as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In paragraph 5a., examiner states “Regarding Claim 1, the phrase “to new and existing patio umbrellas of a type that operates by manually lifting and lowering a canopy opening and closing means on a support mast” renders the claim indefinite,” “The instant claim recites an “install-it-yourself electric opening and closing device” but includes language directed to an umbrella onto which the device may be installed,” “It is unclear whether the applicant intends to claim the install-it-yourself electric opening and closing device alone or in combination with the umbrella”. “For the purposes of examination, the Office interprets Claim 1 to be directed only to the install-it-yourself electric opening and closing device.” “Any language regarding the umbrella will not be given any patentable weight”.

Remark 5A: In Claim 1, applicant claims an “electric opening and closing device that adapts” “to new and existing patio umbrellas”. The title of applicant’s invention is “Retrofit motor and control for patio umbrellas”. Applicant specifically claims both “new” and “existing” patio umbrellas. This meaning is not “indefinite” because applicant’s device is intended to “retrofit” to patio umbrellas without regard to their age, in other words “new” or “existing”. Paragraph (0015) in specification states, “The present invention can be retrofit to a new or existing conventional patio umbrella 10 with little or no modification to conventional patio umbrella 10.” “Conventional” patio umbrellas are defined in Paragraph (0002) of the specification “Yoke operating means of conventional patio umbrellas vary in configuration, however all require human effort to operate.” “Another example of a yoke operating means comprises manual hand lifting and lowering of the yoke, or other means requiring human effort to cause the yoke to move up and down the mast and thereby open and close the canopy.” Applicant specifications clearly demonstrate that the phrase “to new and existing patio umbrellas of a type” is definite, not indefinite as Examiner states. In Claim 1, applicant limits the claim to a particular type of patio umbrella. Claim 1 claims, “patio umbrellas of a type that operate by manually lifting and lowering a canopy opening and closing means on a support mast.” This

particular type umbrella is supported in the specification, paragraph (0002) “patio umbrellas have a yoke operating means to cause” “the canopy to open and close,” “**example of a yoke operating means comprises manual hand lifting and lowering of the yoke,**” “requiring human effort to cause the yoke to move up and down the mast and thereby open and close the canopy.” This type patio umbrella does not have a crank mechanism. In the art, this type umbrella is commonly referred to as a “market” umbrella which applicant discusses in the specification. This type umbrella comprises a canopy mounted at one end of a solid mast usually made of wood, and an opening and closing means described in paragraph (0002) “The yoke forms a ring applied on the circumference of the mast and is movable along a portion of the length of the mast,” “requiring human effort to cause the yoke to move up and down the mast and thereby causing the canopy to open and close.” The applicant is very definite about what he claims. An integral part of Claim 1 is applicant’s claim that the invention “adapts to” “patio umbrellas of a type that operates by **manually lifting and lowering a canopy opening and closing means**”. Applicant uses the word **retrofit** six times in the specifications, and in the Title of Invention. Retrofit devices are intended for specific but limited functions. By its nature, a retrofit device is designed for a particular application, for example, an electric garage door opener adapts to a garage door. The electric garage door opener does not replace the garage door; it simply retrofits to it and adds an electric opening and closing means. Claim 1 does not claim to be an electric opening and closing device that adapts to a door, or a window shade. Applicant claims an electric opening and closing device that adapts to particular types of patio umbrellas. The device in Claim 1 has limited applications to “patio umbrellas of a type that operates by **manually lifting and lowering a canopy opening and closing means**”. Applicant has distinctly claimed the subject matter which he regards as his invention by limiting Claim 1 to an electric opening and closing device that adapts to a specific type of patio umbrellas. The device in Claim 1 adds to the art because there are no “electric opening and closing” devices that operate patio umbrellas that have manual lifting and lowering means. Claim 1 is gutted if Examiner ignores the operative words “adapts to”, and the limited application, “patio umbrellas of a type that operates by **manually lifting and lowering a canopy opening and closing means**”. Applicant does not claim the patio umbrellas. Applicant requests that Examiner reevaluate his assertion that “any language regarding the umbrella will not be given any patentable weight”.

In Claim 1, the specific type of patio umbrella for which the device **adapts** is definite and relevant.

5. (continued) Paragraph 5 of Office Action:

Examiner states with regard to Claim 1 “Additionally, the phrase “with little or no modification” renders the claim indefinite. It is unclear if applicant intends little or no modification. Further, it is unclear whether modification (if necessary) will be to the “install-it-yourself electric opening and closing device” or to the umbrellas on which it is installed.

Remark 5B: The application is mute regarding modification to the device, and no modification to the device is claimed. Clarification regarding possible modification to the patio umbrella can be found in the specification, beginning paragraph (0007) which states, “install to a conventional patio umbrella with little or no modification to the umbrella”. The word “to” clearly indicates that if a modification is necessary, it will be to the umbrella. The inventor has a working model of the device. When the device is installed to a particular **type** of patio umbrella, **no modification** is needed. An example of **no modification** is in the specification paragraph (0016), “Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot”. This describes a yoke with an **existing hole**. When the device is installed to another **type** of patio umbrella, for example one that has a yoke with **no hole**, a minor modification to the umbrella yoke might be needed. In the specification, adapts with **little modification** is described in paragraph (0016), “use an alternate means to affix cable 18 to yoke 19.” The decision of what “alternate means” is left up to the installer, who might decide to affix an eye-screw to the yoke for tying the cable end, or some other means as determined by the installer. The use of an eye-screw is an example of **little modification**. Those skilled in the art would agree that the addition of an eye-screw constitutes **little modification**. Because there are types of patio umbrellas that require no modification to the umbrella, **and** there are types of patio umbrellas that require for example the use of an eye-screw, the phrase “little or no modification” is literally accurate. Applicant requests that Examiner withdraw his objection to the uncertain meaning of “with little or no modification”.

Examiner states with regard to Claim 1, “The phrase “an average person can easily install” is indefinite as people have different skill levels in this technology and what may be “easy” for some may be extremely difficult for others”

Remark 5C: Examiner’s attention is directed to page 5 of specifications, end of paragraph (0015) which states, “The present invention is designed for do-it-yourself installation and **usually the only tool required is a screwdriver**”. In paragraph (0016), “by inserting cable 18 through hole 39 in yoke 19 and secure by **tying knot**”. Also, “use an alternate means to affix cable 18 to yoke 19,” such as affixing an eye-screw. In applicant’s specifications and remarks, he has demonstrated that his invention can be installed using a screwdriver, and by tying a knot. Those skilled in the art would then agree that an **average** person could install the device because an average person has the skill to use a screwdriver and to tie a knot. Further, using a screwdriver and tying a knot is “easy”. In this regard, the majority of people are believed to be average, therefore “an average person can easily install” is an accurate statement. Applicant requests that Examiner withdraw his objection to the uncertain meaning of “an average person can easily install”.

Examiner states “The phrase “located above the canopy opening and closing means” renders the claim indefinite, as the canopy opening and closing means is movable component of any umbrella and the location of the claimed housing could change depending on where the opening and closing means is located at the time of construction.”

Remark 5D: Those skilled in the art agree that the canopy opening and closing means is indeed movable, however travel distance is limited by the umbrella mechanism. Paragraph (0002) of the specification defines the opening and closing means of the patio umbrella, “a canopy” “affixed at its center to the upper end of the mast”, “The yoke forms a ring applied on the circumference of the mast and is movable along a portion of the length of the mast.” The maximum travel limit of the yoke is approximately twelve inches below the canopy, i.e., twelve inches below the upper end of the mast. Those skilled in the art understand that the yoke and canopy are drivingly engaged **together**, or in other words, they are joined and move cooperatively as explained in Paragraph (0002) of the specifications, “Conventional patio umbrellas have a yoke operating means to cause the yoke to move up and down the mast to

apply and reduce force on the levers and thereby the ribs causing the canopy to open and close.” Therefore, travel of the canopy opening and closing means up the mast beyond a certain point is prevented because the canopy is fully open and it cannot stretch any more. The same applies for limited travel down the mast. Travel distance of the patio umbrella opening and closing means is **predictable** as in Paragraph (0002) in specification states “**along a portion of the length of the mast**”. The motor housing is specifically designed for installation in the space under the canopy, and above the **predictable** maximum upward travel distance of the canopy opening and closing means. The motor housing remains in a stationary, superior position to the canopy opening and closing means **at all times**. In this position, it can control the up and down travel of the opening and closing means. The location of the motor housing does not change after installation, as Paragraph (0016) of the specification states, “When screws 25 are tightened motor housing 16 and motor housing mount bracket 24 are securely clamped to mast 13 and prevented from moving.” In the specification, page 3, end of paragraph (0008) states, “Also illustrated is a view of an embodiment of the present invention mounted to the umbrella mast **under the canopy**. In paragraph (0014) “**Further illustrated in Fig. 1 is an embodiment of the present invention whereby motor housing 16 is affixed to the upper end of mast 13 under canopy 11.**” In Fig. 1, the motor housing is clearly shown mounted at the upper end of the patio umbrella mast under the canopy and above the umbrella opening and closing means “yoke 19”. It is known in the art that patio umbrella opening and closing means have predictable travel limits. Because the device is **fixed** “**to the upper end of mast under canopy**”, it is always in a stationary, superior and controlling position of the umbrella opening and closing means. This is one of the unique and important features of the device, and **allows it to adapt to several types** of umbrellas. No other device in the art can claim to adapt to all of the types of patio umbrellas such as manual lift and lower, hand-operated ropes of pulleys, and hand-controlled winch and cable. Applicant requests that Examiner withdraw his objection that the phrase “located above the canopy opening and closing means” renders the claim indefinite.

5. (continued) Paragraph 5b of Office Action:

In paragraph 5b., examiner asserts “Regarding Claim 2, the phrase “to new and existing patio umbrellas of a type that operates by rope and pulley that lifts and lowers a canopy opening and closing means on a support mast” renders the claim indefinite,” “The instant claim recites an

“install-it-yourself electric opening and closing device” but includes language directed to an umbrella onto which the device may be installed,” “It is unclear whether the applicant intends to claim the install-it-yourself electric opening and closing device alone or in combination with the umbrella”. “For the purposes of examination, the Office interprets Claim 2 to be directed only to the install-it-yourself electric opening and closing device.” “Any language regarding the umbrella will not be given any patentable weight”.

Remark 5E: In Claim 2, applicant claims an “electric opening and closing device that adapts” “to new and existing patio umbrellas”. The title of applicant’s invention is “Retrofit motor and control for patio umbrellas”. Applicant specifically claims both “new” and “existing” patio umbrellas. This meaning is not “indefinite” because applicant’s device is intended to “retrofit” to patio umbrellas without regard to their age, in other words “new” or “existing”. Paragraph (0015) in specification states, “The present invention can be retrofit to a new or existing conventional patio umbrella 10 with little or no modification to conventional patio umbrella 10.” “Conventional” patio umbrellas are defined in Paragraph (0002) of the specification “Yoke operating means of **conventional** patio umbrellas vary in configuration, however all require human effort to operate.” “Another example of a yoke operating means comprises one or more **hand operated ropes over pulleys** drivingly engaged with the yoke.” Applicant’s specification clearly demonstrates that the phrase “to new and existing patio umbrellas of a type” is definite, not indefinite as Examiner states. In Claim 2, Applicant limits the claim to a particular **type** of patio umbrella. Claim 2 claims, “patio umbrellas of a type that operates by “rope and pulley that lifts and lowers a canopy opening and closing means on a support mast.” This particular **type** umbrella is supported in the specification, paragraph (0002) “patio umbrellas have a yoke operating means to cause” “the canopy to open and close,” “Another example of a yoke operating means comprises one or more **hand operated ropes over pulleys** drivingly engaged with the yoke”, “requiring human effort to cause the yoke to move up and down the mast and thereby open and close the canopy.” This type umbrella does not have a crank mechanism. In the art, this type umbrella is commonly referred to as a “market” umbrella which applicant discusses in the specification. This type umbrella comprises a canopy mounted at one end of a solid mast usually made of wood, and an opening and closing means described in paragraph (0002) “The yoke forms a ring applied on the circumference of the mast and is

movable along a portion of the length of the mast,” “requiring human effort to cause the yoke to move up and down the mast and thereby causing the canopy to open and close.” The applicant is very definite about what he claims. An integral part of Claim 2 is applicants claim that the invention “adapts to” “patio umbrellas of a type that operates by “rope and pulley that lifts and lowers a canopy opening and closing means on a support mast.” Applicant uses the word **retrofit** six times in the specifications, and in the Title of Invention. Retrofit devices are intended for specific but limited functions. By its nature, a retrofit device is designed for a particular application, for example, an electric garage door opener adapts to a garage door. The electric garage door opener does not replace the garage door; it simply retrofits to it and adds an electric opening and closing means. Claim 2 does not claim to be an electric opening and closing device that adapts to a door, or a window shade. Applicant claims an electric opening and closing device that adapts only to particular types of patio umbrellas. The device in Claim 2 has limited applications to “patio umbrellas of a type that operates by **rope and pulley** that lifts and lowers a canopy opening and closing means on a support mast.” The device in Claim 2 adds to the art because there are no “electric opening and closing” devices in the art that can operate patio umbrellas that have hand operated rope and pulley means. Applicant has distinctly claimed the subject matter which he regards as his invention by limiting Claims 2 to an electric opening and closing device that adapts to a specific type of patio umbrellas. Claim 2 is gutted if Examiner ignores the operative words “adapts to”, and the limited application, “patio umbrellas of a type that operates by **rope and pulley** that lifts and lowers a canopy opening and closing means”. Applicant does not claim the patio umbrellas. Applicant requests that Examiner reevaluate his assertion that “any language regarding the umbrella will not be given any patentable weight”. In Claim 2, the specific type of patio umbrella for which the device **adapts** is definite and relevant.

Examiner states in paragraph 5b of the Office action regarding Claim 2, “Additionally, the phrase “with little or no modification” renders the claim indefinite. It is unclear if applicant intends little or no modification. Further, it is unclear whether modification (if necessary) will be to the “install-it-yourself electric opening and closing device” or to the umbrellas on which it is installed.

Remark 5F: The application is mute regarding modification to the device, and no modification to the device is claimed. Clarification regarding possible modification to the patio umbrella can be found in the specification, beginning paragraph (0007) which states, “install to a conventional patio umbrella with little or no modification to the umbrella”. The word “to” clearly indicates that if a modification is necessary, it will be to the umbrella. The inventor has a working model of the device. When the device is installed to a particular **type** of patio umbrella, **no modification** is needed. An example of **no modification** is in the specification paragraph (0016), “Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot”. This describes a yoke with an **existing hole**. When the device is installed to another **type** of patio umbrella, for example one that has a yoke with **no hole**, a minor modification to the umbrella yoke might be needed. In the specification, adapts with **little modification** is described in paragraph (0016), “use an alternate means to affix cable 18 to yoke 19.” The decision of what “**alternate means**” is left up to the installer, who might decide to affix an eye-screw to the yoke for tying the cable end, or some other means as determined by the installer. The use of an eye-screw is an example of **little modification**. Those skilled in the art would agree that the addition of an eye-screw constitutes **little modification**. Because there are types of patio umbrellas that require no modification to the umbrella, **and** there are types of patio umbrellas that require for example the use of an eye-screw, the phrase “**little or no modification**” is literally accurate. Applicant requests that Examiner withdraw his objection to the uncertain meaning of “**with little or no modification**”.

Examiner states with regard to Claim 2, “The phrase “an average person can easily install” is indefinite as people have different skill levels in this technology and what may be “easy” for some may be extremely difficult for others”

Remark 5G: Examiner’s attention is directed to page 5 of specifications, end of paragraph (0015) which states, “The present invention is designed for do-it-yourself installation and **usually the only tool required is a screwdriver**”. In paragraph (0016), “by inserting cable 18 through hole 39 in yoke 19 and secure by **tying knot**”. Also, “use an alternate means to affix cable 18 to yoke 19,” such as affixing an eye-screw. In applicant’s specifications and remarks, he has demonstrated that his invention can be installed using a screwdriver, and by tying a knot. Those skilled in the art would then agree that an **average** person could install the device

because an average person has the skill to use a screwdriver and to tie a knot. Further, using a screwdriver and tying a knot is “easy”. In this regard, the majority of people are believed to be average, therefore “an average person can easily install” is an accurate statement. Applicant requests that Examiner withdraw his objection to the uncertain meaning of “an average person can easily install”.

Examiner states with regard to Claim 2, “The phrase “located above the canopy opening and closing means” renders the claim indefinite, as the canopy opening and closing means is a movable component of any umbrella and the location of the claimed housing could change depending on where the opening and closing means if located at the time of construction.

Remark 5H: Those skilled in the art agree that the canopy opening and closing means is indeed movable, however travel distance is limited by the umbrella mechanism. Paragraph (0002) of the specification defines the opening and closing means of the patio umbrella, “a canopy” “affixed at its center to the upper end of the mast”, “The yoke forms a ring applied on the circumference of the mast and is movable along a portion of the length of the mast.” The maximum travel limit of the yoke is approximately twelve inches below the canopy, i.e., twelve inches below the upper end of the mast. Those skilled in the art understand that the yoke and canopy are drivingly engaged **together**, or in other words, they are joined and move cooperatively as explained in Paragraph (0002) of the specifications, “Conventional patio umbrellas have a yoke operating means to cause the yoke to move up and down the mast to apply and reduce force on the levers and thereby the ribs causing the canopy to open and close.” Therefore, travel of the canopy opening and closing means up the mast beyond a certain point is prevented because the canopy is fully open and it cannot stretch any more. The same applies for limited travel down the mast. Travel distance of the patio umbrella opening and closing means is **predictable** as in Paragraph (0002) in specification states “along a portion of the length of the mast”. The motor housing is specifically designed for installation in the space under the canopy and above the **predictable** maximum upward travel distance of the canopy opening and closing means. The motor housing remains in a stationary, superior position to the canopy opening and closing means **at all times**. In this position, it can control the up and down travel of the opening and closing means. The location of the motor housing does not change after installation, as Paragraph (0016) of the specification states, “When screws 25 are tightened

motor housing 16 and motor housing mount bracket 24 are securely clamped to mast 13 and prevented from moving.” In the specification, page 3, end of paragraph (0008) states, “Also illustrated is a view of an embodiment of the present invention mounted to the umbrella mast **under the canopy**. In paragraph (0014) “Further illustrated in Fig. 1 is an embodiment of the present invention whereby **motor housing 16 is affixed to the upper end of mast 13 under canopy 11.**” In Fig. 1, the motor housing is clearly shown mounted at the upper end of the patio umbrella mast under the canopy and above the umbrella opening and closing means “yoke 19”. It is known in the art that patio umbrella opening and closing means have predictable travel limits. Because the device is **fixed “to the upper end of mast under canopy”**, it is always in a stationary, superior and controlling position of the umbrella opening and closing means. This is one of the unique and important features of the device, and **allows it to adapt to several types** of umbrellas. No other device in the art can claim to adapt to all of the types of patio umbrellas such as manual lift and lower, hand-operated ropes of pulleys, and hand-controlled winch and cable. Applicant requests that Examiner withdraw his objection that the phrase “located above the canopy opening and closing means” renders the claim indefinite.

5. (continued) Paragraph 5c of Office Action:

In paragraph 5c., examiner asserts “Regarding Claim 3, the phrase “to new and existing patio umbrellas of a type that operates by winch and cable that lifts and lowers a canopy opening and closing means on support mast” renders the claim indefinite,” “The instant claim recites an “install-it-yourself electric opening and closing device” but includes language directed to an umbrella onto which the device may be installed,” “It is unclear whether the applicant intends to claim the install-it-yourself electric opening and closing device alone or in combination with the umbrella”. “For the purposes of examination, the Office interprets Claim 1 to be directed only to the install-it-yourself electric opening and closing device.” “Any language regarding the umbrella will not be given any patentable weight”.

Remark 5I: In Claim 3, applicant claims an “electric opening and closing device that adapts” “to new and existing patio umbrellas”. The title of applicant’s invention is “Retrofit motor and control for patio umbrellas”. Applicant specifically claims both “new” and “existing” patio umbrellas. This meaning is not “indefinite” because applicant’s device is intended to “retrofit” to patio umbrellas without regard to their age, in other words “new” or “existing”. Paragraph

(0015) in specification states, “The present invention can be retrofit to a new or existing conventional patio umbrella 10 with little or no modification to conventional patio umbrella 10.” “Conventional” patio umbrellas are defined in Paragraph (0002) of the specification “Yoke operating means of **conventional** patio umbrellas vary in configuration, however all require human effort to operate.” “An example of a yoke operating means is a mechanism comprising a hand **operated winch, rope and pulley** drivingly engaged with the yoke.” Applicant specifications clearly demonstrate that the phrase “to new and existing patio umbrellas of a type” is definite, not indefinite as Examiner states. In Claim 3, applicant limits the claim to a particular **type** of patio umbrella. Claim 3 claims, “patio umbrellas of a type that operates by hand-controlled winch and cable that lifts and lowers a canopy opening and closing means on a support mast”. This particular **type** umbrella is supported in the specification, paragraph (0002) “patio umbrellas have a yoke operating means to cause” “the canopy to open and close,” “An example of a yoke operating means is a mechanism comprising a hand operated winch, rope and pulley drivingly engaged with the yoke,” “requiring human effort to cause the yoke to move up and down the mast and thereby open and close the canopy.” This **type** umbrella comprises a canopy mounted at one end of a solid mast usually made of wood, and an opening and closing means described in paragraph (0002) “The yoke forms a ring applied on the circumference of the mast and is movable along a portion of the length of the mast,” “requiring human effort to cause the yoke to move up and down the mast and thereby causing the canopy to open and close.” The applicant is very definite about what he claims. An integral part of Claim 3 is applicants claim that the invention “adapts to” “patio umbrellas of a type that operates by hand operated winch”. Applicant uses the word **retrofit** six times in the specifications, and in the Title of Invention. Retrofit devices are intended for specific but limited functions. By its nature, a retrofit device is designed for a particular application, for example, an electric garage door opener adapts to a garage door. The electric garage door opener does not replace the garage door; it simply retrofits to it and adds an electric opening and closing means. Claim 3 does not claim to be an electric opening and closing device that adapts to a door, or a window shade. Applicant claims an electric opening and closing device that adapts only to particular types of patio umbrellas. The device in Claim 3 has limited applications to “patio umbrellas of a type that operates by hand operated winch”. Applicant has distinctly claimed the subject matter which he regards as his invention by limiting Claims 3 to

an electric opening and closing device that **adapts** to a specific type of patio umbrellas. “Adapts” is significant word with regard to “patio umbrellas of a type that operates by hand operated winch” because applicant’s invention retrofits to this type umbrella in a new and innovative way not seen in the art. In specification paragraph (0016), Applicant’s device adapts in such a way so that “Winch mechanism 12, rope 40 and pulley 41 are now bypassed and no longer required, yet can remain in place and will not impede operation of the present invention.” No other device in the art can make this claim. Claim 3 is gutted if Examiner ignores the operative words “adapts to”, and the limited application, “patio umbrellas of a type that operates by hand operated winch lifting and lowering a canopy opening and closing means”. Applicant does not claim the patio umbrellas. Applicant requests that Examiner reevaluate his assertion that “any language regarding the umbrella will not be given any patentable weight”. In Claim 3, the specific type of patio umbrella for which the device **adapts** is definite and relevant.

Examiner states with regard to Claim 3 “Additionally, the phrase “with little or no modification” renders the claim indefinite. It is unclear if applicant intends little or no modification. Further, it is unclear whether modification (if necessary) will be to the “install-it-yourself electric opening and closing device” or to the umbrellas on which it is installed.

Remark 5J: The application is mute regarding modification to the device, and no modification to the device is claimed. Clarification regarding possible modification to the patio umbrella can be found in the specification, beginning paragraph (0007) which states, “install to a conventional patio umbrella with little or no modification to the umbrella”. The word “to” clearly indicates that if a modification is necessary, it will be to the umbrella. The inventor has a working model of the device. When the device is installed to a particular **type** of patio umbrella, **no modification** is needed. An example of **no modification** is in the specification paragraph (0016), “Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot”. This describes a yoke with an **existing hole**. When the device is installed to another **type** of patio umbrella, for example one that has a yoke with **no hole**, a minor modification to the umbrella yoke might be needed. In the specification, **adapts with little modification** is described in paragraph (0016), “use an alternate means to affix cable 18 to yoke 19.” The decision of what “alternate means” is left up to the installer, who might decide to affix an eye-screw to the yoke for tying the cable end, or some other means

as determined by the installer. The use of an eye-screw is an example of **little modification**. Those skilled in the art would agree that the addition of an eye-screw constitutes **little modification**. Because there are types of patio umbrellas that require no modification to the umbrella, **and** there are types of patio umbrellas that require for example the use of an eye-screw, the phrase “little or no modification” is literally accurate. Applicant requests that Examiner withdraw his objection to the uncertain meaning of “with little or no modification”.

Examiner states with regard to Claim 3, “The phrase “an average person can easily install” is indefinite as people have different skill levels in this technology and what may be “easy” for some may be extremely difficult for others”

Remark 5K: Examiner’s attention is directed to page 5 of specifications, end of paragraph (0015) which states, “The present invention is designed for do-it-yourself installation and **usually the only tool required is a screwdriver**”. In paragraph (0016), “by inserting cable 18 through hole 39 in yoke 19 and secure by **tying knot**”. Also, “use an alternate means to affix cable 18 to yoke 19,” such as affixing an eye-screw. In applicant’s specifications and remarks, he has demonstrated that his invention can be installed using a screwdriver, and by tying a knot. Those skilled in the art would agree that **an average person could install the device because an average person has the skill to use a screwdriver and to tie a knot**. Further, using a screwdriver and tying a knot is “easy”. In this regard, the majority of people are believed to be average, therefore “**an average person can easily install**” is an accurate statement. Applicant requests that Examiner withdraw his objection to the uncertain meaning of “**an average person can easily install**”.

Examiner states regarding Claim 3 “The phrase “located above the canopy opening and closing means” renders the claim indefinite, as the canopy opening and closing means is movable component of any umbrella and the location of the claimed housing could change depending on where the opening and closing means is located at the time of construction.”

Remark 5L: Those skilled in the art agree that the canopy opening and closing means is indeed movable, however travel distance is limited by the umbrella mechanism. Paragraph (0002) of the specification defines the opening and closing means of the patio umbrella, “**a canopy**”

“affixed at its center to the upper end of the mast”, “The yoke forms a ring applied on the circumference of the mast and is movable along a portion of the length of the mast.” The maximum travel limit of the yoke is approximately twelve inches below the canopy, i.e., twelve inches below the upper end of the mast. Those skilled in the art understand that the yoke and canopy are drivingly engaged **together**, or in other words, they are joined and move cooperatively as explained in Paragraph (0002) of the specification, “Conventional patio umbrellas have a yoke operating means to cause the yoke to move up and down the mast to apply and reduce force on the levers and thereby the ribs causing the canopy to open and close.” Therefore, travel of the canopy opening and closing means up the mast beyond a certain point is prevented because the canopy is fully open and it cannot stretch any more. The same applies for limited travel down the mast. Travel distance of the patio umbrella opening and closing means is **predictable** as in Paragraph (0002) in specification states “along a **portion** of the length of the mast”. The motor housing is specifically designed for installation in the space under the canopy and above the **predictable** maximum upward travel distance of the canopy opening and closing means. The motor housing remains in a stationary, superior position to the canopy opening and closing means **at all times**. In this position, it can control the up and down travel of the opening and closing means. The location of the motor housing does not change after installation, as Paragraph (0016) of the specification states, “When screws 25 are tightened motor housing 16 and motor housing mount bracket 24 are securely clamped to mast 13 and prevented from moving.” In the specification, page 3, end of paragraph (0008) states, “Also illustrated is a view of an embodiment of the present invention mounted to the umbrella mast **under the canopy**. In paragraph (0014) “Further illustrated in Fig. 1 is an embodiment of the present invention whereby **motor housing** 16 is **affixed to the upper end of mast 13 under canopy 11.**” In Fig. 1, the motor housing is clearly shown mounted at the upper end of the patio umbrella mast under the canopy and above the umbrella opening and closing means “yoke 19”. It is known in the art that patio umbrella opening and closing means have predictable travel limits. Because the device is **fixed** “to the **upper end of mast under canopy**”, it is always in a stationary, superior and controlling position of the umbrella opening and closing means. This is one of the unique and important features of the device, and **allows it to adapt to several types** of umbrellas. No other device in the art can claim to adapt to all of the types of patio umbrellas such as manual lift and lower, hand-operated ropes of pulleys, and hand-

controlled winch and cable. Applicant requests that Examiner withdraw his objection that the phrase “located above the canopy opening and closing means” renders the claim indefinite.

6. Paragraph 6 of Office Action:

Examiner references 35 U.S.C. 103 which forms the basis for all obviousness rejections.

Remark 6A: Patents are often based on improvements in the art. For example, Small in US Patent 2960094 and Lai in US Patent 6182917 both teach motorization of patio umbrellas that have a “crank” mechanism. Lai improves over Small and teaches how to add a motor clutch, etc., to the “crank”. Lai claims, “a manually driving clutch mechanism,” “when the crank is pulled outward to retract the brake shaft,” “the stretching/collecting operation of the parasol can be directly controlled by means of rotating the crank.” Lai’s improvement over Small is a means to engage and disengage the clutch by using the crank. However, at the time of the Small invention, clutches were known. Small did not reveal a “clutch”, although it is obvious to one skilled in the art that a clutch means existed in the Small motor because, such a gear motor can be **forcibly** rotated in both directions. In the case of Small, the crank could be forcibly rotated to enable “stretching/collecting operation of the parasol”. Lai’s claim seems weak in this light. An additional comparison of an improvement by Lai over Small is in the Examiners own words, “It would have been obvious to one of ordinary skill in the art at the time of invention to modify the device of Small by using a remote control receiver and transmitter as taught by Lai”. It is argued that improvements in the art are indeed causes for preservation of the inventor’s intellectual property. As explained in the following Remarks, the improvements presented by the present invention are not obvious. Applicant’s improvements are broad, innovative, and uniquely add to the art.

7. Paragraph 7 of Office Action:

Examiner states, “Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Small in US Patent 2960094 in view of Lai in US Patent 6182917.” “Small discloses an install-it-yourself electric open and closing device”. Lai discloses an umbrella opening and closing device having a remote control.” “In addition, it would have been an obvious matter of design choice to one of ordinary skill in the art at the time of invention to modify the device of Small in view of Lai by mounting the housing above the canopy opening and closing means, since the

applicant has not disclosed that having the housing mounted at this specific location solves any particular problem or imparts an distinct desirable characteristic to the open and closing device and it appears that the device would perform equally well with a different placement of the housing.”

Remark 7: In Application 10/737,330, the inventor teaches improvements in the art that are not obvious, and which are **impossible** in Small and Lai, as follows.

1.) Claim 1 of Application 10/737,330 claims, “an electric opening and closing device that **adapts to**” “patio umbrellas of a type that **operates by manually lifting and lowering a** canopy opening and closing means.” Those skilled in the art concur that the word **adapt** and **retrofit** are synonymous in this instance. Those skilled in the art would further acknowledge that the patio umbrella in Claim 1, “a type that has a **manual** canopy opening and closing means”, also has a solid mast usually made of wood, and **no “crank” mechanism**. It is argued that Small and Lai devices could not be made or used with patio umbrellas that have a **manual** canopy opening and closing means. In Small and Lai, the “crank” mechanism is the required functional motor interface to the umbrella opening and closing means. **However, patio umbrellas that have manual lift and lowering means do not have a crank mechanism.** Small and Lai devices are dependent on coupling to the “crank” mechanism. For example, in Small Fig 2, the crank mechanism comprises crank-handle (23) retained by setscrew (24) and engaged with shaft (20) and reel (17), where reel (17) collects cable (15). Small affixes gear (21) to shaft (20), and drives gear (21) by motor (29) and motor gear (30). The Small device requires driving engagement with the crank means of the patio umbrella. This same dependence on the “crank” interface can be seen in Lai. For example, in Lai “Referring to FIGS. 2, 4A and 5A, the manually operated clutch mechanism 30 is composed of a crank 34, a brake shaft 28, a transmission shaft 24, a collar 26, a steel ball 25, an engaging ring 27 and a small screw 29.” “When the crank 34 is pulled outward, the brake shaft 28 is outward pulled along with the crank 34.” **Lai uses the word “crank” twenty-five (25) times**, which indicates its total dependence on it. The Lai device requires driving engagement with the crank means of the patio umbrella. The Applicant’s device is an improvement in the art because it resolves the problems of installation, and provides a means to “easily” “adapt” the device to all “types” of patio umbrellas, with and without crank-mechanisms, with hollow and sold masts. It is argued

that Small and Lai do not reveal **retrofit** devices. Those skilled in the art agree that a retrofit device adapts with **little or no modification**, such as an electric garage door opener adapts to the garage door. However, as best seen in Small Figure 2, to install the device requires removal of the umbrella's original crank-mechanism, and affixing "cable 15" to "cable reel 17" **through a small hole inside the hollow mast**. This is definitely **not easy**. It is accurate to say that removal of original crank-mechanism, mounting "housing 19", "motor 29" and "switch 32" by making a new hole in the mast, **does not constitute** "little or no modification" that "an average person can easily install". In a preceding argument it was shown that Lai presents a complex system of parts that the average person could not easily retrofit to a patio umbrella without special fixtures and skills. **The Lai device cannot adapt with little or not modification.** On the other hand, if one pursues the argument that Small and Lai did present **retrofit** devices that add electric opening and closing means to a patio umbrella, then one would have to prove that the device could **retrofit** to the patio umbrella in Applicant's Claim 1 (the type has manual hand lifting and lowering of the canopy opening and closing means). The problem for Small and Lai is that the type of patio umbrellas in Applicant's Claim 1 does not have a crank-mechanism. Therefore, the quandary is, how an "**average person**" could "**easily**" retrofit Small and Lai with "**little or no modification**" "**to the umbrellas**" in Applicant's Claim 1. It is argued that an average person could not retrofit Small and Lai devices with little or no modifications. However, let us further pursue the argument that somehow, the Small and Lai device could be made in such a way as to retrofit to patio umbrellas that do not have a crank-mechanism. First, it has been established that the Small or Lai devices must be mounted to the umbrella mast at tabletop level so that the crank-mechanism is accessible to the user as Small and Lai show in their specifications. One has to imagine the Small and Lai housings attached to the umbrella mast. From the housing would project Small's "cable" or Lai's "cord" traveling up the outside of the mast (because this type umbrella has a solid mast as is known in the art), passing over a pulley above the canopy opening and closing means, and down again where it is fixed to the canopy opening and closing means. Therefore, "cable" and "cord" are exposed at user level. When the device operates, "cable" and "cord" travel up and down, and are taut because of the canopy load. Cable or cord would be located about two or more inches away from the umbrellas mast to permit it to pass by the yoke opening and closing means. It can then be argued that a taut, moving cable presents a **safety hazard**, and that clothing or hair could become entangled. Such a device would not have commercial value. In

contrast to the improbability that Small and Lai could somehow retrofit their device to patio umbrellas having manual lift and lowering means as in Applicant's Claim 1, one than comes to admire the Applicant's device for its ease and simplicity of installation and use. Applicant intentionally affixes his motor housing at the upper end of the mast in order that "an average person can easily install with little or not modification". Applicant has revealed an improved device that is not dependent on a "crank" mechanism or any other operating means such as "pull-rope" and "manual" lift. Paragraph (0016) in Applicant's specification states, "Winch mechanism 12, rope 40 and pulley 41 are now **bypassed and no longer required**, yet can remain in place and will not impede operation of the present invention." In the art, "winch 12", "rope 40", and "pulley 41" are the original operating means supplied by the patio umbrella manufacturer. It is significant to state that in the present invention, the original equipment "winch", "rope" and "pulley" are "by-passed and no longer required" The Applicant carefully chose the location for his motor housing, affixing it at the uppermost end of the mast under the canopy, at the very location where the claimed "length of cable" can affix to the canopy opening and closing means. This uppermost end of the mast is also a safe location for the device to operate, and is protected from the environment. Claim 1 accurately describes applicant's device as, "An install-it-yourself electric opening and closing device that adapts with little or no modification to new and existing patio umbrellas of a type that operates by **manually** lifting and lowering a canopy opening and closing means", and having, "a housing means that an average person can easily install". As argued, the Small and Lai device could not retrofit to the type patio umbrellas in Claim 1 because that type umbrella does not have the required crank mechanism. Applicant teaches a significant improvement in the art. Applicant provides a device that is universal in its ability to "adapt" to patio umbrellas no matter the type of human-operated opening and closing means that exists. For example, in the specification, "Position motor housing 16 under canopy 11 near the uppermost end of mast 13". The present invention was intended to be used at "the uppermost end" of the mast and "located above the canopy opening and closing means" because in that position it gains complete control of the umbrella opening and closing means. **The inventor did consider whether his device would perform equally well with a different placement of the housing**, and evaluated all locations of the patio umbrella mast. The applicant's objectives for his invention include a device that "adapt with little or no modification" to patio umbrellas of the three types in Claims 1-3, and

that an “average person” can “easily install”. After producing several designs and testing models, the applicant determined that the location that satisfied all his objectives is to position the housing above the canopy opening and closing means. In that location, the present invention is not dependent on the human-operating means that exists on patio umbrellas such as a “crank-handle”, “pull-ropes”, and “manual” control. In Small and Lai, patio umbrellas that have **manual opening and closing means** cannot be operated. By locating the device “above the canopy opening and closing means”, the present invention solves the problem of how to retrofit an electric opening and closing device to a patio umbrella “of a type” in Claim 1 “that operates by manually lifting and lowering a canopy opening and closing means on a support mast”. For Small and Lai devices, the mid-point of the mast is the only location that their device can be used; namely, the location of the crank-handle mechanism. To attempt to mount the Small and Lai devices “near the uppermost end of mast” would be impractical and require major modifications to the umbrella apparatus. Those skilled in the art agree that an average person could not easily accomplish this. Further, if Small and Lai devices were located “near the uppermost end the mast”, which is approximately 7-1/2 feet above the ground, it would be impossible for most people to reach and use the crank-handle mechanism, clutch, or the switches. The only reason that Small and Lai devices are located at the mid-point of the mast is to engage the “crank” mechanism. In Application 10/737,330 specification Paragraph (0011) and Fig. 4 “illustrates a partial view of an embodiment of the present invention showing a “control module” mounted to the conventional patio umbrella mast adjacent to the top level of a table”. Paragraph (0017) and Fig. 4, “control module 21 comprises up-switch 28 and down-switch 29 that respectively control first polarity and second polarity DC voltage to motor 26”. Another example of the improvement in the art is that applicant’s controls are mounted near the mid-point of umbrella mast, or “table-top” level, and convenient for use, while the motor is mounted at the upper end of the mast in a safe, out-of-the-way location. The location of the housing of the present invention is unique and adds to the art in such a way that **umbrellas with various types of operating means can be controlled**. Applicant has disclosed the significance of mounting the motor housing at the upper end of the mast, and the problems that it resolves. Regardless of the umbrella operating mechanism, locating the motor housing at the upper end of the mast is **safe, efficient**, and allows “an average person” to easily **retrofit** the device all types

of patio umbrellas “with little or no modification” regardless of the patio umbrella design and operating means. Applicant’s device and means are new and unique improvements in the art.

2.) In Small and Lai, their devices could not adapt to all types of patio umbrellas, and there is no evidence that Small and Lai even considered other types of patio umbrellas. It was not obvious to Small and Lai as persons skilled in the art to apply their invention to patio umbrellas that have **manual opening and closing means** as in applicant’s Claim 1, or umbrellas with **hand operated ropes** as in Claim 2. The focus of Small and Lai is entirely on crank-operated umbrellas. The claim that “an average person can easily install” is not obvious in Lai. For example, in Lai, the words “install” and “retrofit” are completely absent. Those skilled in the art would agree that Lai’s mechanism requires installation by a patio umbrella manufacturer, or a trained individual who has fabrication skills beyond that of an average person. In describing Figs. 3, 4A and 5A, Lai states “A rear end of the transmission shaft 24 is passed through the tube seat 50 and then sequentially passed through the respective components of the damper mechanism and finally tightened by the tightening nut 45. The check gasket 47 is inserted into a fissure 241 at the end of the transmission shaft.”. An “average person” would have difficulty understanding the meaning of Lai’s installation instruction. The claim that “an average person can easily install” is also not obvious to Small. In Small, to attach gear (21) requires removal of umbrella crank handle (23) by removing setscrew (24), lock (25), and washer (22). Those skilled in the art, and those who have done this before, agree that when these components are removed, spring (26) pulls shaft (20) and cable reel (17) out of the umbrella mast. The end of the cable reel (17) is released from bearing (18), causing cable reel (17) to tilt and unwind a portion of cable (15) from the cable reel (17). When this happens, it is difficult to reassemble the components through the small access hole in the umbrella mast. Small and Lai do not provide a device that “an average person can easily install”, and such a device is not obvious from Small and Lai. Application 10/737,330 convincingly teaches that “an average person can easily install” the device. Paragraph (0007) of the applicant’s specification states, “An additional object of the present invention is to provide a retrofit motor and control means that an average person can easily install to a conventional patio umbrella with little or no modification to the umbrella.” In paragraph (0016) of the specification, the inventor demonstrates how this is done, “Join motor housing 16 and motor housing mounting bracket 24 using screws 25.” “As in

Fig. 2, attach one end of cable 18 to cable reel 17 using retention means in the cable reel 17. Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot 42". A person able to use a screwdriver and tie a knot can use the present invention. This supports the inventors claim that "an average person can easily install" the device. The inventor uses the word **retrofit** numerous times in the specifications. His objective is to create a device with features that allow it to easily retrofit or "**adapt**" to **new and existing patio umbrellas of all types known in the art**. In the specification, Paragraph (0002), the inventor defines the three types of patio umbrellas that his device adapts to, "manual hand lifting and lowering", "hand operated ropes over pulleys" and "hand operated winch". In Paragraph (0014) and Fig. 4, the inventor teaches how his device is able to adapt to the three types of patio umbrellas, "the present invention whereby motor housing 16 is affixed to the upper end of mast 13 under canopy 11". In this location, the device can control all types of patio umbrellas. Applicant's device is distinct from Small and Lai, and improves over Small and Lai.

3.) Claim 1 of Application 10/737,330 claims, claims an "electric opening and closing device that adapts with little or no modification to new and existing patio umbrellas". The inventor points out how the device is used with **little or no modification** to the patio umbrellas. In paragraph (0016) of the specification "Position motor housing 16 under canopy 11 near the uppermost end of mast 13 and hold against mast 13. As in Fig. 3, position motor housing mounting bracket 24 on the opposite side of motor housing 16 and hold both against mast 13." "Join motor housing 16 and motor housing mounting bracket 24 using screws 25." "As in Fig. 2, attach one end of cable 18 to cable reel 17 using retention means in the cable reel 17. "Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot 42". To those skilled in the art, this is an example of how to use the device with "no modification" to the patio umbrella. Paragraph (0016) also states, "or use an alternate means to affix cable 18 to yoke 19" As explained in Remark 3D, "alternate means" might be to affix an eye-screw to the yoke for tying the cable end. To those skilled in the art, this is an example of how to use the device with "little modification" to the patio umbrella. Contrasted with Small and Lai, the existing crank mechanism of the patio umbrella must be disassembled and modified, or removed entirely and replaced with a new device. To those skilled in the art,

this does not constitute “little or no modification”. It is argued that “**little or no modification**” cannot be learned from Small and Lai, and is not obvious from Small and Lai.

8. Paragraph 8 of Office Action:

Examiner states, “Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Small in US Patent 2960094 in view of Lai in US Patent 6182917.” “Small discloses an install-it-yourself electric open and closing device”. Lai discloses an umbrella opening and closing device having a remote control.” “In addition, it would have been an obvious matter of design choice to one of ordinary skill in the art at the time of invention to modify the device of Small in view of Lai by mounting the housing above the canopy opening and closing means, since the applicant has not disclosed that having the housing mounted at this specific location solves any particular problem or imparts an distinct desirable characteristic to the open and closing device and it appears that the device would perform equally well with a different placement of the housing.”

Remark 8: In Application 10/737,330, the inventor teaches improvements in the art that are not obvious, and which are **impossible** in Small and Lai, as follows.

1.) Claim 2 of Application 10/737,330 claims, “an electric opening and closing device that adapts to” “patio umbrellas of a type that operates by hand operated ropes over pulleys. Those skilled in the art concur that the word **adapt** and **retrofit** are synonymous in this instance. Those skilled in the art would further acknowledge that the patio umbrella in Claim 2, “a type that has a hand operated ropes over pulleys driving the canopy opening and closing means”, also has a solid mast usually made of wood, and no “crank” mechanism. It is argued that Small and Lai devices could not be made or used with patio umbrellas that have **hand operated rope** operating means. In Small and Lai, the “crank” mechanism is the required functional motor interface to the umbrella opening and closing means. However, patio umbrellas that have hand operated ropes over pulley lifting and lowering means do not have a crank mechanism. Small and Lai devices are dependent on coupling to the “crank” mechanism. For example, in Small Fig 2, the crank mechanism comprises crank-handle (23) retained by setscrew (24) and engaged with shaft (20) and reel (17), where reel (17) collects cable (15). Small affixes gear (21) to shaft (20), and drives gear (21) by motor (29) and motor gear (30).

The Small device requires driving engagement with the crank means of the patio umbrella. This same dependence on the “crank” interface can be seen in Lai. For example, in Lai “Referring to FIGS. 2, 4A and 5A, the manually operated clutch mechanism 30 is composed of a crank 34, a brake shaft 28, a transmission shaft 24, a collar 26, a steel ball 25, an engaging ring 27 and a small screw 29.” “When the crank 34 is pulled outward, the brake shaft 28 is outward pulled along with the crank 34.” **Lai uses the word “crank” twenty-five (25) times**, which indicates his total dependence on it. The Lai device requires driving engagement with the crank means of the patio umbrella. The Applicant’s device is an improvement in the art because it resolves the problems of installation, and provides a means to “easily” “adapt” the device to all “types” of patio umbrellas, with and without crank-mechanisms, with hollow and solid masts. It is argued that Small and Lai are not **retrofit** devices. Those skilled in the art agree that a retrofit device adapts to another device with **little or no modification**, such as an electric garage door opener adapts to the garage door. However, as best seen in Small Figure 2, to install the device requires removal of the umbrella’s original crank-mechanism, and affixing “cable 15” to “cable reel 17” **through a small hole inside the hollow mast**. This is definitely **not easy**. It is accurate to say that removal of original crank-mechanism, mounting “housing 19”, “motor 29” and “switch 32” by making a new hole in the mast, **does not constitute** “little or no modification” that “an average person can easily install”. In a preceding argument it was shown that Lai presents a complex system of parts that the average person could not easily retrofit to a patio umbrella without special fixtures and skills. In other words, the Lai device could not be adapted with little or no modification. On the other hand, if one pursues the argument that Small and Lai are **retrofit** devices, then one would have to prove that the device could **retrofit** to the patio umbrella in Applicant’s Claim 2 (the type of umbrella that has **hand operated ropes over pulleys** lifting and lowering of the canopy opening and closing means). The problem for Small and Lai is that the type of patio umbrellas in Applicant’s Claim 2 does not have a crank-mechanism. Therefore, the quandary is, how an “**average person**” could “**easily**” retrofit Small and Lai with “**little or no modification**” “**to the umbrellas**” in Applicant’s Claims 2. It is argued that an average person could not retrofit Small and Lai devices with little or no modifications. However, let us further pursue the argument that somehow, the Small and Lai devices could be made to retrofit to patio umbrellas that do not have a crank-mechanism. First, it is established that Small or Lai devices must be mounted to the umbrella mast at tabletop level so that the crank-mechanism

is accessible to the user as is desired by Small and Lai. One has to imagine the Small and Lai device comprising a housing attached to the umbrella mast. From the housing would project Small's "cable" or Lai's "cord" traveling up the outside of the mast (because this type umbrella has a solid mast as is known in the art), passing over a pulley above the canopy opening and closing means, and down again where it is fixed to the canopy opening and closing means. Therefore, the "cable" and "cord" would be exposed at user level. When the device operates, "cable" and "cord" would travel up and down, and would be taut because of the canopy load. It is worth noting that the cable or cord would be located about two or more inches away from the umbrellas mast to permit it to pass by the yoke opening and closing means. It can then be argued that a taut, moving cable presents a **safety hazard**, and that clothing or hair could become entangled. Such a device would not have commercial value. In contrast to the improbability that Small and Lai could somehow retrofit their device to patio umbrellas having hand operated rope and pulley lift and lowering means as in Applicant's Claim 2, one than comes to admire the Applicant's device for its ease and simplicity of installation and use. Applicant intentionally affixes his motor housing at the upper end of the mast in order that "an average person can easily install with little or not modification". Applicant has revealed an improved device that is not dependent on a "crank" mechanism or any other operating means such as "pull-rope" and "manual" lift. Paragraph (0016) in Applicant's specification states, "Winch mechanism 12, rope 40 and pulley 41 are now **bypassed and no longer required**, yet can remain in place and will not impede operation of the present invention." In the art, "winch 12", "rope 40", and "pulley 41" are the original operating means supplied by the patio umbrella manufacturer. It is significant to state that in the present invention, the original equipment "winch", "rope" and "pulley" are "by-passed and no longer required" The Applicant carefully chose the location for his motor housing, affixing it at the uppermost end of the mast under the canopy, at the very location where the claimed "length of cable" can affix to the canopy opening and closing means. This uppermost end of the mast is also a safe location for the device to operate, and is protected from the environment. Claim 2 accurately describes applicant's device as, "An install-it-yourself electric opening and closing device that adapts with little or no modification to new and existing patio umbrellas of a type that operates by **hand-operated ropes over pulley** lifting and lowering a canopy opening and closing means", and having, "a housing means that an average person can easily install". As argued, the Small

and Lai device could not retrofit to the type patio umbrellas in Claim 2 because that type umbrella does not have the required crank mechanism. Applicant teaches a significant improvement in the art. Applicant provides a device that is universal in its ability to “adapt” to patio umbrellas no matter the type of human-operated opening and closing means that exists. For example, in the specification, “Position motor housing 16 under canopy 11 near the uppermost end of mast 13”. The present invention was intended to be used at “the uppermost end” of the mast and “located above the canopy opening and closing means” because in that position it gains complete control of the umbrella opening and closing means. **The inventor did consider whether his device would perform equally well with a different placement of the housing**, and evaluated all locations of the patio umbrella mast. The applicant’s objectives for his invention include a device that “adapts with little or no modification” to patio umbrellas of the three types in Claims 1-3, and that an “average person” can “easily install”. After producing several designs and testing models, the applicant determined that the location that satisfied all his objectives is to position the housing above the canopy opening and closing means. In that location, the present invention is not dependent on the human-operating means that exists on patio umbrellas such as a “crank-handle”, “pull-ropes”, and “manual” control. Small and Lai devices cannot operate patio umbrellas that have a **hand-operated rope opening and closing means**. By locating the device “above the canopy opening and closing means”, the present invention solves the problem of how to retrofit an electric opening and closing device to a patio umbrella “of a type” in Claim 2 “that operates by rope and pulley that lifts and lowers a canopy opening and closing means on a support mast”. For Small and Lai devices, the mid-point of the mast is the only location that their device can be used; namely, the location of the crank-handle mechanism. To attempt to mount the Small and Lai devices “near the uppermost end of mast” would be impractical and require major modifications to the umbrella apparatus. Those skilled in the art agree that an average person could not easily accomplish this. Further, if Small and Lai devices were located “near the uppermost end the mast”, which is approximately 7-1/2 feet above the ground, it would be impossible for most people to reach and use the crank-handle mechanism, clutch, or the switches. The only reason that Small and Lai devices are located at the mid-point of the mast is to engage the “crank” mechanism. In Application 10/737,330 specification Paragraph (0011) and Fig. 4 “illustrates a partial view of an embodiment of the present invention showing a

“control module” mounted to the conventional patio umbrella mast adjacent to the top level of a table”. Paragraph (0017) and Fig. 4, “control module 21 comprises up-switch 28 and down-switch 29 that respectively control first polarity and second polarity DC voltage to motor 26”. Another example of the improvement in the art is that applicant’s controls are mounted near the mid-point of umbrella mast, or “table-top” level, and convenient for use, while the motor is mounted at the upper end of the mast in a safe, out-of-the-way location. The location of the housing of the present invention is unique and adds to the art in such a way that **umbrellas with various types of operating means can be controlled**. Applicant has disclosed the significance of mounting the motor housing at the upper end of the mast, and the problems that it resolves. Regardless of the umbrella operating mechanism, locating the motor housing at the upper end of the mast is **safe, efficient**, and allows “an average person” to easily **retrofit** the device all types of patio umbrellas “with little or no modification” regardless of the patio umbrella design and operating means. Applicant’s device and means are new and unique improvements in the art.

2.) In Small and Lai, their devices could not adapt to all types of patio umbrellas, and there is no evidence that Small and Lai even considered other types of patio umbrellas. It was not obvious to Small and Lai as persons skilled in the art to apply their invention to patio umbrellas that have **hand-operated ropes over pulleys opening and closing means** as in applicant’s Claim 2. The focus of Small and Lai is entirely on crank-operated umbrellas. The claim that “an average person can easily install” is not obvious in Lai. For example, in Lai, the words “install” and “retrofit” are completely absent. Those skilled in the art would agree that Lai’s mechanism requires installation by a patio umbrella manufacturer, or a trained individual who has fabrication skills beyond that of an average person. In describing Figs. 3, 4A and 5A, Lai states “A rear end of the transmission shaft 24 is passed through the tube seat 50 and then sequentially passed through the respective components of the damper mechanism and finally tightened by the tightening nut 45. The check gasket 47 is inserted into a fissure 241 at the end of the transmission shaft.”. An “average person” would have difficulty understanding the meaning of Lai’s installation instruction. The claim that “an average person can easily install” is also not obvious to Small. In Small, to attach gear (21) requires removal of umbrella crank handle (23) by removing setscrew (24), lock (25), and washer (22). Those skilled in the art, and those who have done this before, agree that when these components are removed, spring (26) pulls shaft

(20) and cable reel (17) out of the umbrella mast. The end of the cable reel (17) is released from bearing (18), causing cable reel (17) to tilt and unwind a portion of cable (15) from the cable reel (17). When this happens, it is difficult to reassemble the components through the small access hole in the umbrella mast. Small and Lai do not provide a device that “an average person can easily install”, and such a device is not obvious from Small and Lai. Application 10/737,330 convincingly teaches that “an average person can easily install” the device. Paragraph (0007) of the applicant’s specification states, “An additional object of the present invention is to provide a retrofit motor and control means that an average person can easily install to a conventional patio umbrella with little or no modification to the umbrella.” In paragraph (0016) of the specification, the inventor demonstrates how this is done, “Join motor housing 16 and motor housing mounting bracket 24 using screws 25.” “As in Fig. 2, attach one end of cable 18 to cable reel 17 using retention means in the cable reel 17. Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot 42”. A person able to use a screwdriver and tie a knot can use the present invention. This supports the inventors claim that “an average person can easily install” the device. The inventor uses the word **retrofit** numerous times in the specifications. His objective is to create a device with features that allow it to easily retrofit or “**adapt**” to **new and existing patio umbrellas of all types known in the art**. In the specification, Paragraph (0002), the inventor defines the three types of patio umbrellas that his device adapts to, “manual hand lifting and lowering”, “hand operated ropes over pulleys” and “hand operated winch”. In Paragraph (0014) and Fig. 4, the inventor teaches how his device is able to adapt to the three types of patio umbrellas, “the present invention whereby motor housing 16 is affixed to the upper end of mast 13 under canopy 11”. In this location, the device can control all type of patio umbrellas. Applicant’s device is distinct from Small and Lai, and improves over Small and Lai.

3.) Claim 2 of Application 10/737,330 claims, claims an “electric opening and closing device that adapts with little or no modification to new and existing patio umbrellas”. The inventor points out how the device is used with **little or no modification** to the patio umbrellas. In paragraph (0016) of the specifications, “Position motor housing 16 under canopy 11 near the uppermost end of mast 13 and hold against mast 13. As in Fig. 3, position motor housing mounting bracket 24 on the opposite side of motor housing 16 and hold both against mast 13.

Join motor housing 16 and motor housing mounting bracket 24 using screws 25.” “As in Fig. 2, attach one end of cable 18 to cable reel 17 using retention means in the cable reel 17. Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot 42”. To those skilled in the art, this is an example of how to use the device with “no modification” to the patio umbrella. Paragraph (0016) also states, “or use an alternate means to affix cable 18 to yoke 19” As explained in Remark 3D, “alternate means” might be to affix an eye-screw to the yoke for tying the cable end. To those skilled in the art, this is an example of how to use the device with “little modification” to the patio umbrella. Contrasted with Small and Lai, the existing crank mechanism of the patio umbrella must be disassembled and modified, or removed entirely and replaced with a new device. To those skilled in the art, this does not constitute “little or no modification”. It is argued that “**little or no modification**” cannot be learned from Small and Lai, and is not obvious from Small and Lai.

9. Paragraph 9 of Office Action:

Examiner states, “Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Small in US Patent 2960094 in view of Lai in US Patent 6182917.” “Small discloses an install-it-yourself electric open and closing device”. Lai discloses an umbrella opening and closing device having a remote control.” “In addition, it would have been an obvious matter of design choice to one of ordinary skill in the art at the time of invention to modify the device of Small in view of Lai by mounting the housing above the canopy opening and closing means, since the applicant has not disclosed that having the housing mounted at this specific location solves any particular problem or imparts an distinct desirable characteristic to the open and closing device and it appears that the device would perform equally well with a different placement of the housing.”

Remark 9: In Application 10/737,330, the inventor teaches improvements in the art that are not obvious, and which are **impossible** in Small and Lai, as follows.

1.) Claim 3 of Application 10/737,330 claims, “an electric opening and closing device that adapts to” “patio umbrellas of a type that operates by a hand-controlled winch and cable that lifts and lowers a canopy opening and closing means”. Those skilled in the art agree that the word **adapt** and **retrofit** are synonymous in this instance. Small and Lai devices are

dependent on coupling to the “crank” mechanism. For example, in Small Fig 2, the crank mechanism comprises crank-handle (23) retained by setscrew (24) and engaged with shaft (20) and reel (17), where reel (17) collects cable (15). Small affixes gear (21) to shaft (20), and drives gear (21) by motor (29) and motor gear (30). The Small device requires driving engagement with the crank means of the patio umbrella. This same dependence on the “crank” interface can be seen in Lai. For example, in Lai “Referring to FIGS. 2, 4A and 5A, the manually operated clutch mechanism 30 is composed of a crank 34, a brake shaft 28, a transmission shaft 24, a collar 26, a steel ball 25, an engaging ring 27 and a small screw 29.” “When the crank 34 is pulled outward, the brake shaft 28 is outward pulled along with the crank 34.” **Lai uses the word “crank” twenty-five (25) times**, which indicates its total dependence on it. The Lai device requires driving engagement with the crank means of the patio umbrella. The Applicant’s device is an improvement in the art because it resolves the problems of installation, and provides a means to “easily” “adapt” the device to all “types” of patio umbrellas, with and without crank-mechanisms, with hollow and solid masts. It is further argued that the Small and Lai devices could not easily “adapt” or “retrofit” **to** the patio umbrella mast in Applicant’s Claim 3. Small and Lai devices either modify or completely replace the umbrella existing crank-mechanism. Applicant reveals one of the improvements over Small and Lai in paragraph (0016) of the specification, “Winch mechanism 12, rope 40 and pulley 41 are now **bypassed and no longer required**, yet can remain in place and will not impede operation of the present invention.” As in the art, “winch 12” (also known as the crank-mechanism), “rope 40”, and “pulley 41” are the original operating means supplied by the patio umbrella manufacturer. It is significant to state that in the present invention, the original equipment “winch”, “rope” and “pulley” are “by-passed and no longer required”. The Applicant carefully chose the location for his motor housing, affixing it at the uppermost end of the mast under the canopy, at the very location where the **claimed** “length of cable” can affix to the canopy opening and closing means. This uppermost end of the mast is also a safe location for the device to operate, and is protected from the environment. Claim 3 accurately describes Applicant’s device as, “An install-it-yourself electric opening and closing device that adapts with little or no modification to new and existing patio umbrellas of a type that operates by **hand-controlled winch** lifting and lowering a canopy opening and closing means”, and having, “a housing means that an average person can easily install”. Applicant teaches a significant

improvement in the art. Applicant provides a device that is universal in its ability to “adapt” to patio umbrellas no matter the type of human-operated opening and closing means that exists. For example, in the specification, “Position motor housing 16 under canopy 11 near the uppermost end of mast 13”. The present invention was intended to be used at “the uppermost end” of the mast and “located above the canopy opening and closing means” because in that position it gains complete control of the umbrella opening and closing means. **The inventor did consider whether his device would perform equally well with a different placement of the housing**, and evaluated all locations of the patio umbrella mast. The applicant’s objectives for his invention include a device that “adapt with little or no modification” to patio umbrellas of the three types in Claims 1-3, and that an “average person” can “easily install”. After producing several designs and testing models, the applicant determined that the location that satisfied all his objectives is to position the housing above the canopy opening and closing means. In that location, the present invention is not dependent on the human-operating means that exists on patio umbrellas such as a “crank-handle”, “pull-ropes”, and “manual” control. **By locating the device “above the canopy opening and closing means”, the present invention solves the problem of how an “average person” can “easily” retrofit an electric opening and closing device to a patio umbrella “of a type” in Claim 3 “with little or no modification”.** For Small and Lai devices, the mid-point of the mast is the only location that their device can be used; namely, the location of the crank-handle mechanism. To attempt to mount the Small and Lai devices “near the uppermost end of mast” would be impractical and require major modifications to the umbrella apparatus. Those skilled in the art agree that an average person could not easily accomplish this. Further, if Small and Lai devices were located “near the uppermost end the mast”, which is approximately 7-1/2 feet above the ground, it would impossible for most people to reach and use the crank-handle mechanism, clutch, or the switches. In Application 10/737,330 specification Paragraph (0011) and Fig. 4 “illustrates a partial view of an embodiment of the present invention showing a “control module” mounted to the conventional patio umbrella mast adjacent to the top level of a table”. Paragraph (0017) and Fig. 4, “control module 21 comprises up-switch 28 and down-switch 29 that respectively control first polarity and second polarity DC voltage to motor 26”. Another example of the improvement in the art is that applicant’s controls are mounted near the mid-point of umbrella mast, or “table-top” level, and convenient for use, while the motor is mounted at the upper end

of the mast in a safe, out-of-the-way location. The location of the housing of the present invention is unique and adds to the art in such a way that **umbrellas with various types of operating means can be controlled**. Applicant has disclosed the significance of mounting the motor housing at the upper end of the mast, and the problems that it resolves. One resolved problem follows. If the motor housing were affixed to the mast adjacent to and above the crank mechanism, the motor housing would obstruct the movement of the umbrella opening and closing means when it travels down the mast. This prevents the canopy from closing fully. Further, if the motor housing is affixed to the mast adjacent to but below the crank mechanism, and the umbrella is mounted to a patio table, there is not adequate space between the top of the table and bottom of crank-mechanism to mount the housing. If the housing were miniaturized so that it could fit in the small space between the tabletop and crank-mechanism, then a pulley would be required and mounted at the top of the mast where a motor driven lift/lower cable would pass over the pulley and attach to the canopy opening and closing means. This causes two problems, a.) the additional a pulley component and installation step, and b.) any motorized rotating device at tabletop level, especially one pulling an exposed taut cable, represents a **child safety issue** because of the possibility that clothing or hair could become entangled. Regardless of the umbrella operating mechanism, locating the motor housing at the upper end of the mast is **safe, efficient**, and allows “an average person” to easily **retrofit** the device all types of patio umbrellas “with little or no modification” regardless of the patio umbrella design and operating means. Applicant’s device and means are new and unique improvements in the art.

2.) In Small and Lai, their devices could not adapt to all types of patio umbrellas, and there is no evidence that Small and Lai even considered other types of patio umbrellas. The focus of Small and Lai is entirely on crank-operated umbrellas. The claim that “an average person can easily install” is not obvious in Lai. For example, in Lai, the words “install” and “retrofit” are completely absent. Those skilled in the art would agree that Lai’s mechanism requires installation by a patio umbrella manufacturer, or a trained individual who has fabrication skills beyond that of an average person. In describing Figs. 3, 4A and 5A, Lai states “A rear end of the transmission shaft 24 is passed through the tube seat 50 and then sequentially passed through the respective components of the damper mechanism and finally tightened by the tightening nut 45. The check gasket 47 is inserted into a fissure 241 at the end of the

transmission shaft.”. An “average person” would have difficulty understanding the meaning of Lai’s installation instruction. The claim that “an average person can easily install” is also not obvious to Small. In Small, to attach gear (21) requires removal of umbrella crank handle (23) by removing setscrew (24), lock (25), and washer (22). Those skilled in the art, and those who have done this before, agree that when these components are removed, spring (26) pulls shaft (20) and cable reel (17) out of the umbrella mast. The end of the cable reel (17) is released from bearing (18), causing cable reel (17) to tilt and unwind a portion of cable (15) from the cable reel (17). When this happens, it is difficult to reassemble the components through the small access hole in the umbrella mast. Small and Lai do not provide a device that “an average person can easily install”, and such a device is not obvious from Small and Lai. Application 10/737,330 convincingly teaches that “an average person can easily install” the device. Paragraph (0007) of the applicant’s specification states, “An additional object of the present invention is to provide a retrofit motor and control means that an average person can easily install to a conventional patio umbrella with little or no modification to the umbrella.” In paragraph (0016) of the specification, the inventor demonstrates how this is done, “Join motor housing 16 and motor housing mounting bracket 24 using screws 25.” “As in Fig. 2, attach one end of cable 18 to cable reel 17 using retention means in the cable reel 17. Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot 42”. A person able to use a screwdriver and tie a knot can use the present invention. This supports the inventors claim that “an average person can easily install” the device. The inventor uses the word **retrofit** numerous times in the specifications. His objective is to create a device with features that allow it to easily retrofit or “**adapt**” to **new and existing patio umbrellas of all types known in the art**. In Paragraph (0014) and Fig. 4, the inventor teaches how his device is able to adapt to all type patio umbrellas, “the present invention whereby motor housing 16 is affixed to the upper end of mast 13 under canopy 11”. In this location, the device can control all type of patio umbrellas. Applicant’s device is distinct from Small and Lai, and improves over Small and Lai.

3.) Claim 3 of Application 10/737,330 claims, claims an “electric opening and closing device that adapts with little or no modification to new and existing patio umbrellas”. The inventor points out how the device is used with **little or no modification** to the patio umbrellas. In

paragraph (0016) of the specifications, “Position motor housing 16 under canopy 11 near the uppermost end of mast 13 and hold against mast 13. As in Fig. 3, position motor housing mounting bracket 24 on the opposite side of motor housing 16 and hold both against mast 13. Join motor housing 16 and motor housing mounting bracket 24 using screws 25.” “As in Fig. 2, attach one end of cable 18 to cable reel 17 using retention means in the cable reel 17. Attach the opposite end of cable 18 to yoke 19 by inserting cable 18 through hole 39 in yoke 19 and secure by tying knot 42”. To those skilled in the art, this is an example of how to use the device with “no modification” to the patio umbrella. Paragraph (0016) also states, “or use an alternate means to affix cable 18 to yoke 19” As explained in Remark 3D, “alternate means” might be to affix an eye-screw to the yoke for tying the cable end. To those skilled in the art, this is an example of how to use the device with “little modification” to the patio umbrella. Contrasted with Small and Lai, the existing crank mechanism of the patio umbrella must be disassembled and modified, or removed entirely and replaced with a new device. To those skilled in the art, this does not constitute “little or no modification”. It is argued that “**little or no modification**” cannot be learned from Small and Lai, and is not obvious from Small and Lai.

Summary:

Paragraphs 2 and 3 of the Office Action:

Applicant proves that specification paragraphs (0009), (0011) and (0014) show how to enable one skilled in the art to **make** the invention. Further, Applicant proves that specification paragraph (0016) shows how to **use** the invention, and paragraph (0018) shows how to **operate** the invention. The description about how to install the invention using only a screwdriver and tying a knot is unforgettable. Applicant’s arguments, and paragraph (0016) and other parts of the specification fully supports the claims “install-it-yourself”, “adapts with little or not modification,” “that an average person can easily install”. Applicant petitions the Examiner to allow Claims 1-3 under the first paragraph of 35 U.S.C. 112.

Paragraphs 4, 5a, 5b, and 5c of the Office Action:

Applicant has shown that he has particularly pointed out and distinctly claimed the subject matter which he regards as his invention. The specification supports the claims of “an electric opening and closing device that adapts” to particular types of patio umbrella. For example, in Claim 1, the umbrella is a type that “operates by manually lifting and lowering a canopy

opening and closing means". This is a remarkably different type patio umbrella in Claims 2 and 3. The specification Paragraph (0002) defines the differences and similarities in the operating means of three types of patio umbrellas in the Claims. Paragraphs (0016) and (0017) in the specifications describes how easily the "device" can adapt to, and operate each type. Applicant does not claim the patio umbrellas. The three **types** of patio umbrellas are relevant, and integral to inventor's three claims. Examiner is requested to reevaluate his assertion that "any language regarding the umbrella will not be given any patentable weight". Regarding Examiner's comments about "little or no modification", Applicant has shown that sometimes "no" modification is required, and at other times a "little modification" to the patio umbrella **only** is needed. Examples in paragraph (0016) of the specification reveal "no modification" and "little modification" respectively; "insert cable through hole in yoke and tie knot", "or use an alternate means to affix cable to yoke." Applicant uses the "eye-screw" example to explain the "alternate mean". Therefore, "little or no modification" is an accurate claim. Regarding Examiner's comments about "an average person can easily install", the Applicant proves that Paragraphs (0015) and (0016) of the specification are convincing, and that the only skill level needed to install the device is the ability to use a screwdriver and tie a knot. One skilled in the art would concur that using a screwdriver and tying a knot are "easy" skills for an "average person". Therefore, the claim that "an average person can easily install" is entirely accurate. Regarding Examiner's comments that "located above the canopy opening and closing means" renders the claim indefinite, as the means are movable. Applicant argues that those skilled in the art concur that the travel distance along "a portion of the mast" of the canopy opening and closing means, is **limited**. The opening and closing means cannot reach the upper end of the mast because the canopy is stretched fully. There always remains a **predictable** space between the maximum travel distance of the "yoke" and the "uppermost end of the mast" where the device can be affixed to the mast. This is true in all patio umbrella construction, and all types claimed in Claims 1-3. Applicant petitions Examiner to withdraw his rejections in Paragraph 5 of the Office Action.

Paragraphs 6, 7, 8, and 9 of the Office Action:

Applicant has revealed the significant differences between his invention and the prior art, and in particular, differences from Small and Lai. For example, the devices in Small and Lai apply

driving means to the patio umbrella crank-mechanism. Further, their devices are completely dependent on interfacing with the crank-mechanism. It was shown that to install their devices requires the disassemble and modifications of the existing crank-mechanism, or complete replacement of the mechanism. Further, Small and Lai devices can not adapt to “patio umbrellas of the type in Applicants Claims 1 and 2 that operate by “**manually** lifting and lowering a canopy opening and closing means”, and “patio umbrellas of a type that operate by **rope and pulley** that lifts and lowers a canopy opening and closing means” because these type umbrellas do not have the crank-mechanism for which Small and Lai are dependent.

Applicant’s invention makes improvement in the art which are not obvious. For example, Applicant has shown that his device is not dependent on interfacing with the crank mechanism. In addition, using the Applicant’s device, “an average person can easily install”, “with little or no modification to new and existing patio umbrellas”. These claims are supported and demonstrated in Paragraph (0016) of the specification installation instructions, by using only a “screwdriver” and tying a “knot”. Small and Lai devices do not qualify as “easy” to install with “little or no modification”. It was convincingly argued that Small and Lai are not retrofit device, and that their devices require installation by a trained individual who has fabrication skills beyond that of an average person, or by a patio umbrella manufacturer. Further, the only obvious design choice for Small and Lai is to mount their device to the crank mechanism at the mid-point of the mast; no other options exist. Applicant has disclosed the significance of mounting his motor housing at the upper end of the mast, and the problems that it resolves such as **eliminating interference** with the operation of the canopy opening and closing means, **eliminating additional components and installation steps**, and **eliminating a child safety hazard**. Locating the motor housing at the upper end of the mast is **safe, efficient**, and allows “an average person” to easily **retrofit** the device all types of patio umbrellas “with little or no modification” regardless of the patio umbrella design and operating means. The present invention exceeds the crank-handle operating mechanism disclosed in Small and Lai, and it improves the art by **teaching how a device can operate umbrellas that have, and do not have a crank-handle operating mechanism**. The present invention is unique in the art because it can operate any of the three prevalent types of patio umbrellas. These type umbrellas and their opening and closing means are intentionally claimed in Claims 1, 2 and 3. Small and Lai do not claim any such device. The fact that Small and Lai are mute on this point is evidence

that their device cannot operate all types of patio umbrellas. Small and Lai specifically limited their claims to controlling umbrellas that have crank-handle operating mechanisms. The present invention goes beyond Small and Lai and improves the art. The present invention is a universal controller that can **adapt** to any of the **umbrella types** revealed in all Claims. Small and Lai reveal no such device, nor do they reveal the important and merchandisable concept of a truly **easy to install retrofit** control for various **types** of umbrellas. There is nothing in the Claims, Drawings and Specifications of Small and Lai to support Examiner's obviousness rejection. Applicant petitions Examiner to withdraw his rejections in Paragraphs 7, 8 and 9 of the Office Action.



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